

Nebraska Forest Health Highlights 2019

Nebraska boasts a diverse array of forest resources. From the ponderosa pine forests of the Panhandle's Pine Ridge to the hardwood forests of the Missouri River bluffs, trees and forests play an important role in the lives of all Nebraskans and in the stability of ecological systems across the state and region.

Nebraska's 1.24 million acres of forestland represents many unique mixes of vegetation types. The hardwood forests of eastern Nebraska are representative of the central hardwoods of the eastern United States. Ponderosa pine forests in the west are representative of the Rocky Mountains, and the birch/aspen forests in northern Nebraska are representative of northern boreal forests. These forest types, combined with elm-ash-cottonwood riparian forests, mixed conifer forests, conservation tree plantings and urban forests, create a highly diverse and unique array of tree and forest resources growing within an agricultural and range landscape. With the addition of non-forestland with trees, conservation plantings and community forests, the total number of acres of treed or forested areas is approximately 3.3 million acres.



Figure 1 Niobrara River Valley in northern Nebraska

The dominant species of Nebraska's non-forestland with trees (defined as less than one acre, less than 120 feet wide and less than 10% stocked) are eastern redcedar, Siberian elm, hackberry, red mulberry and ash. These trees provide unique benefits such as rural home wind protection, snow drift management, energy savings, livestock protection, crop protection and yield increases, water quality and soil protection, wildlife habitat and other ecosystem services. Although not large units individually, combined these areas are important components that provide key and essential ecosystem services in Nebraska's rural agriculture-dominated landscape.

Pests and Problems of Note in 2019

Bomb Cyclone 2019: Blizzards, Flooding and Ice/Debris Damage

The bomb cyclone of March 2019 brought blizzard conditions to the western half of Nebraska and triggered historic flooding in the east. Many communities, counties, landowners and homeowners suffered major infrastructure damage including homes, businesses, highways, bridges and dams, as well as livestock losses and deep silting of cropland. Ice and debris in the flood waters leveled trees or stripped their bark.



Figure 2 Bark stripped by ice and debris during March 2019 flooding

Herbicide Damage

As in past years, many reports of herbicide damage were reported in both rural and urban settings. To increase our understanding of the identification and impact of herbicides, Nebraska participated in a six-state study analyzing herbicide levels in tree leaf tissues. In this study, foliage from trees exhibiting herbicide symptoms was collected and tested for several growth-regulator herbicides, and symptoms were recorded.

Seventy-eight trees from across the state were sampled. All had detectible levels of both 2,4-D and dicamba. Other chemicals detected in certain trees included triclopyr, picloram, 2,4,5-T, bromoxynil and clopyralid. The data from all states will be used to build a database of information to assist in herbicide damage diagnosis in trees.

Emerald Ash Borer

One new county detection of emerald ash borer (*Agrilus planipennis*) was recorded in 2019: Saunders County (city of Ashland). This brings the total counties with known EAB detections to five, including Cass, Dodge, Douglas, and Lancaster counties. Also in 2019, USDA APHIS-PPQ released three parasitoid wasps (*Oobius agrili*, *Tetrastichus planipennisi*, and *Spathius galinae*) in four locations: Mahoney State Park, Platte River State Park, Fremont Lakes State Park, and Pioneers Park in Lincoln. The first species targets EAB eggs; the other two, larvae. Monitoring for establishment of the parasitoids will occur over the next few years.

Zimmerman Pine Moth and Related Species

Reports of Zimmerman pine moth and related *Dioryctria* species appear to have increased in recent years. Larvae damage trees by tunneling just beneath the bark of the trunk and branches, most commonly on the trunk just below a branch. The tunnels they make can girdle the trunk or branches or physically weaken them so they are easily broken by wind or snow. Heavily infested trees are often deformed and are sometimes killed. Soft, pinkish pitch masses form on the trunk or branches in response to the feeding. Three species are known in Nebraska: *D. zimmermani*, *D. ponderosae*, and *D. tumicolella*.



Figure 3 Broken pine branch and pitch masses caused by Dioryctria species

Woolly Apple Aphid

The woolly apple aphid (*Eriosoma lanigerum*) is an occasional pest of the apple family that can cause serious damage to the roots of newly established or young trees. The aphids can be

easily identified by the presence of a white waxy substance that forms around them, and are usually found on branches, in bark cracks, or on the roots.

New aphids will generally infest the upper branches of the tree first, usually exploiting damaged sites on the bark such as those caused by hail. As populations increase, the insects may begin to move down towards the root tissue. Here the colonies will form warty galls and can severely impact the tree by damaging the root tissue.



Figure 4 Root galls on crab apple caused by woolly apple aphid

Velvet Longhorned Beetle

Prior to 2018, velvet longhorned beetle (*Trichoferus campestris*) had not been recorded in Nebraska. In Spring of 2018, walnut wood originating from South Dakota and brought to Wynot in the northeastern part of Nebraska was determined to be infested with the beetle. A table made from the wood and sold to a resident of Yankton, South Dakota, had adult beetles emerge. Nebraska Department of Agriculture (NDA) set traps that year, but no beetles were collected.

In 2019, NDA set traps at 16 sites in 14 counties from June to August. Velvet longhorned beetles were collected from traps in Keith, Douglas, and Cass counties. These collections have not changed any existing nor created any new quarantines or export restrictions within the state.

Thousand Cankers Disease/Walnut Twig Beetle

In late 2019, NDA made the first detection of walnut twig beetle (*Pityophthorus juglandis*) in the state. This insect is the vector for the thousand cankers disease fungus (*Geosmithia morbida*), which infects and kills eastern black walnut. Beetles were collected from traps in Scotts Bluff County (city of Gering). Surveys for the disease are planned for 2020.

Sudden Oak Death

Nebraska was one of the many states in 2019 that received a late spring shipment of rhododendron plants infested with *Phytophthora ramorum*, the fungus that causes sudden oak death (SOD) and Ramorum blight. No established cases of either disease have been found in the state.

SOD has killed millions of trees (mostly oak and tanoak) in California and Oregon since its discovery in the mid-1990s. Ramorum blight occurs on a wide variety of other plants, which exhibit varying symptoms from leaf spots and blights to twig dieback. The two diseases are especially a problem in areas with frequent foggy conditions and high rainfall (50+ inches/yr). Disease risk to Nebraska trees is low due to a relatively dry climate.

Squirrels

Extensive bark stripping by tree squirrels (*Sciurus* spp.) can cause serious damage to trees, to the point that trees may even need to be removed. A number of theories exist regarding the reason squirrels strip bark including feeding on the high sugar content of the phloem, looking for moisture or nesting material, gnawing to wear down their incisors (which grow continuously), and to obtain dietary calcium. Affected trees include elm, hackberry, maple and crabapple. Squirrels will also eat buds and clip twigs from both deciduous and evergreen trees.



Figure 5 Bark stripping by squirrels in 2019

Pileated Woodpecker

Pileated woodpecker (*Dryocopus pileatus*), once rarely found in Nebraska, is beginning to make a comeback and expand throughout the southeastern part of the state. This woodpecker is large (about crow size) and can create deep openings in trees either as a nesting site or hunting for food. Damage is usually characterized by large deep oval shaped holes with an abundance of woodchips on the ground at the base of the tree.

Woodpecker activity is a clear sign that something has infested a tree such as carpenter ants, wood borers, or other insects. Pileated woodpecker prefers carpenter ants, which typically colonize trees with extensive decay.



Figure 6: Pileated woodpecker with young (picture by Richard Pick, Audubon Photography Award). Right: Woodchip pile below woodpecker excavation

For more information on forest health in Nebraska, please visit the website:

[Nebraska Forest Service.](http://nebraskaforestservice.org)



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